

# CERTIFICATE OF CONFORMITY



Member of the FM Global Group

## 1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. **Certificate No:** FM18US0071X
3. **Equipment:** 640i and 780i Insertion and In-line Thermal Mass Flowmeters  
(Type Reference and Name)
4. **Name of Listing Company:** Sierra Instruments Inc
5. **Address of Listing Company:** 5 Harris Court,  
Monterey, California 93940, USA

6. The examination and test results are recorded in confidential report number:

3040602 dated 28<sup>th</sup> December 2012

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3600:2018, FM 3615:2022, FM 3810:1989, ANSI/NEMA 250:2020, ANSI/UL 61010-1:2012

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. **Equipment Ratings:**

Explosionproof for Class I, Division 1, Groups B, C and D hazardous (classified) locations, indoors and outdoors (Type 4X) with an ambient temperature rating of -40°C to +60°C with temperature class marking of T3C.

11. The marking of the equipment shall include:

Class I Division 1, Groups B, C, D; T3C Ta = -40°C to +60°C; Type 4X

12. **Description of Equipment:**

The 640i and 780i Insertion and In-line Thermal Mass Flowmeters are used for gas flow measurement applications. The flowmeters integrate configuration, validation and diagnostics in a probe-mounted or remotely-

**Certificate issued by:**

J.E. Marquedant  
VP, Manager - Electrical Systems

20 March 2024

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals LLC. One Technology Way, Norwood, MA 02062 USA

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mounted housing. When remotely-mounted, the electronics enclosure can be mounted up to 200 feet away from the remote probe enclosure. All variables can be monitored on an optional, viewable display. The flowmeters can also provide 4-20 mA flow and temperature output, alarm output and an optional pressure output. The 640i is suitable for insertion into pipes or ducts from three inches up to 72 inches while the 780i can go in-line to 8-inch flow bodies. For probes longer than 13 inches, a seal is required within 13 inches of the probe and enclosure. The 640i and 780i Insertion and In-line Thermal Mass Flowmeters operate on 24 Vdc or 100-240 Vac. The flowmeters are intended for use in an ambient temperature of -20°C to +60°C and with process temperatures of -40°C to +200°C at a pressure of 300 psi (in-line) or 500 psi (insertion).

Refer to Annex

### 13. Specific Conditions of Use:

A suitably certified conduit sealing device is required within 13 inches of the enclosure for probes longer than 13 inches.

### 14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

### 15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

### 16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
28 December 2012	Original Issue.
8 June 2018	<u>Supplement 5:</u> Report Reference: – PR449880 dated 8 <sup>th</sup> June 2018 Description of the Change: Standards updates and certificate updated to the latest format.
20 March 2024	<u>Supplement 6:</u> Report Reference: RR239863 dated 20 March 2024. Description of the Change(s): Revised model code related to software changes, updated non-safety related drawings. Revised FM standards to latest editions, added ANSI/UL 61010 per FM 3810 requirements.

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# ANNEX

## 640i

### Description of Equipment:

#### **640i-a-2-b-c-d-e-f-g-h-0-i-i-i-j. Insertion Thermal Mass Flowmeter.**

a = Multivariable VT or VTP.

b = Probe L06, L09, L13, L18, L24, L36, L48, L(\*) or L(\*) M5. \*Specify probe length (max 48 inches).

c = Mounting M0, M1, M1-M2(\*), M3, M4(\*), M8(\*), M9 or M15(\*). \*Specify pipe O.D.

d = Enclosure E2 or E4(\*). \*Specify cable length.

e = Power P2 or P3.

f = Output V4 or V6\*. \*VTP only.

g = Display DD or DD-NRT.

h = Pressure MP1\*, MP2\*, MP3\*, MP4\* or N/A<sup>†</sup>. \*VTP only. <sup>†</sup>For VT or E4.

i = Gas 0, 1, 1A, 2, 2A, 3, 4, 4A, 6, 6A, 7, 7A, 8, 8A, 10, 10A, 11, 12, 12A or 99.

j = Digital Communication: MB\*, HART\* or Blank. \*only available in P2 Power option.

## 780i

### Description of Equipment:

#### **780i-a-2-b-c-d-e-f-g-0-h-h-h-i. In-line Thermal Mass Flowmeter.**

a = Multivariable VT or VTP.

b = Flow Body N2, N3, N4, N5, N6, N7, N8, N9, N10, F2, F3, F4, F5, F6, F7, F8, F9, F10, FD6, FD7, FD8, FD9, FD10, GD4, GD5, GD6, GD7, GD8, GD9 or GD10.

c = Enclosure E2 or E4(\*). \*Specify cable length.

d = Power P2 or P3.

e = Output V4 or V6\*. \*VTP only.

f = Display DD or DD-NRT.

g = Pressure MP1\*, MP2\*, MP3\*, MP4\* or N/A<sup>†</sup>. \*VTP only. <sup>†</sup>For VT or E4.

h = Gas 0, 1, 1A, 2, 2A, 3, 4, 4A, 6, 6A, 7, 7A, 8, 8A, 10, 10A, 11, 12, 12A or 99.

i = Digital Communication: MB\*, HART\* or Blank. \*only available in P2 Power option.

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